Area of a triangle

In this lesson we'll look at how to find the area of a triangle.

Area of a triangle

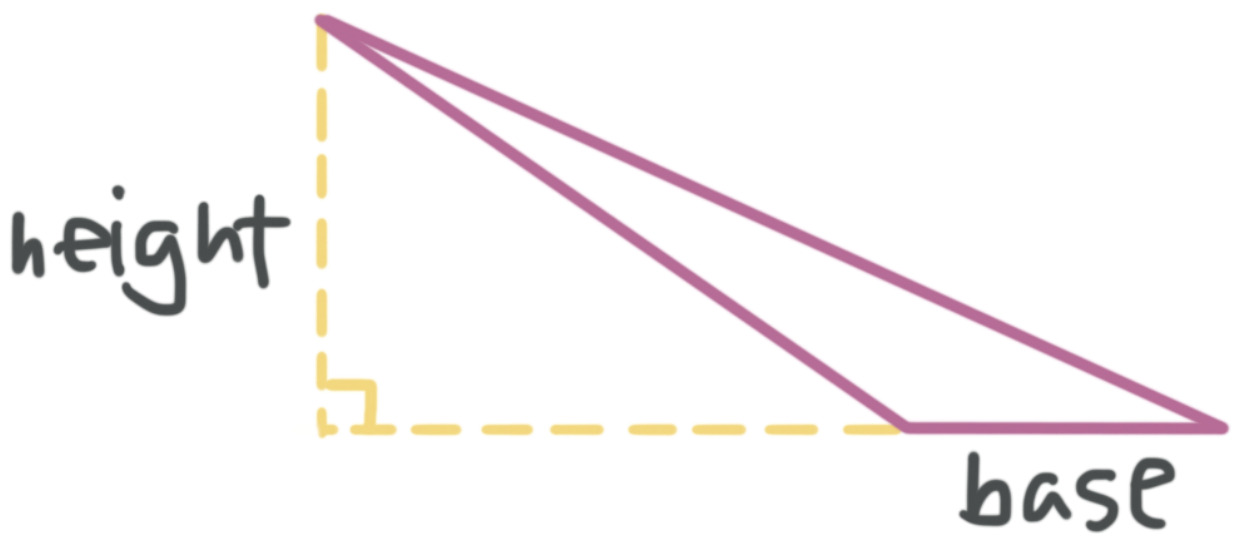
The area of a triangle is found by taking one half the base, multiplied by the height.

$$A = \frac{1}{2}bh$$

The area is always in units^2.

Any side of the triangle can be the base, but the height is drawn from a vertex of a triangle to the side that you're using as the base. The height could look different depending on the type of triangle, but it's always perpendicular to the base.

Scalene



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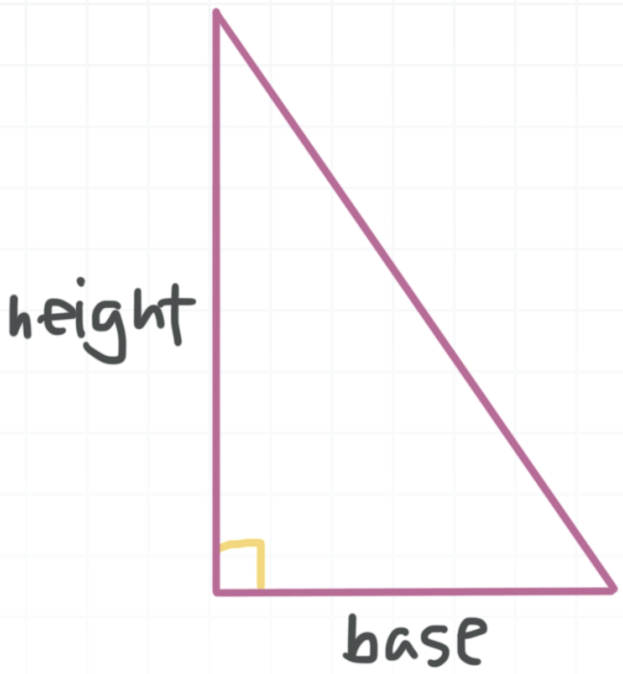
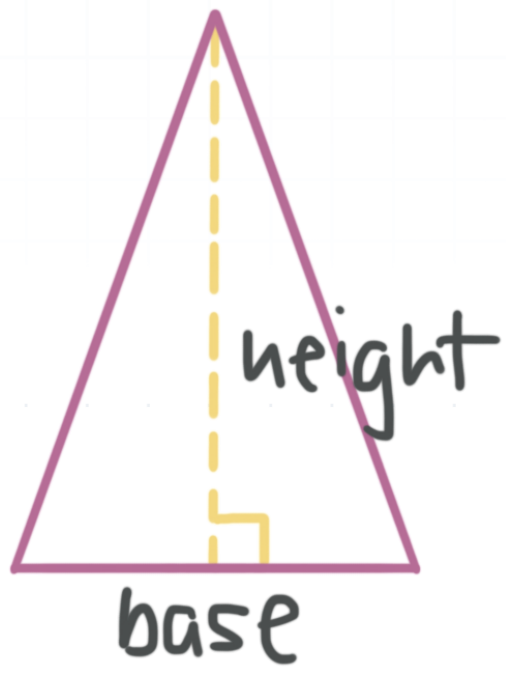
Right



Isosceles



Equilateral

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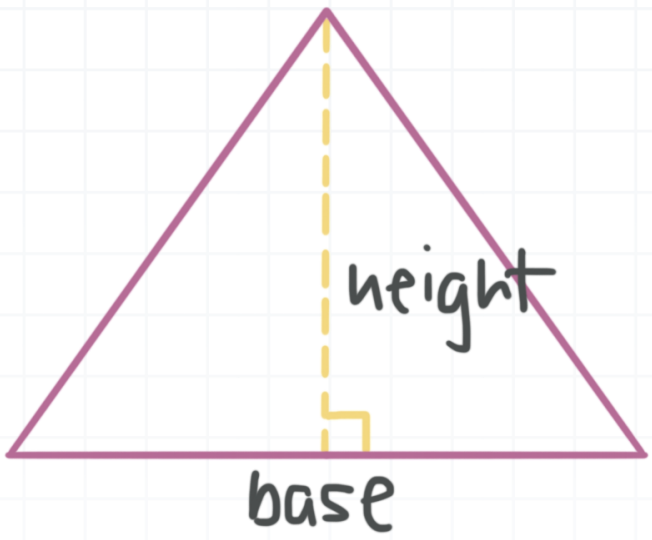
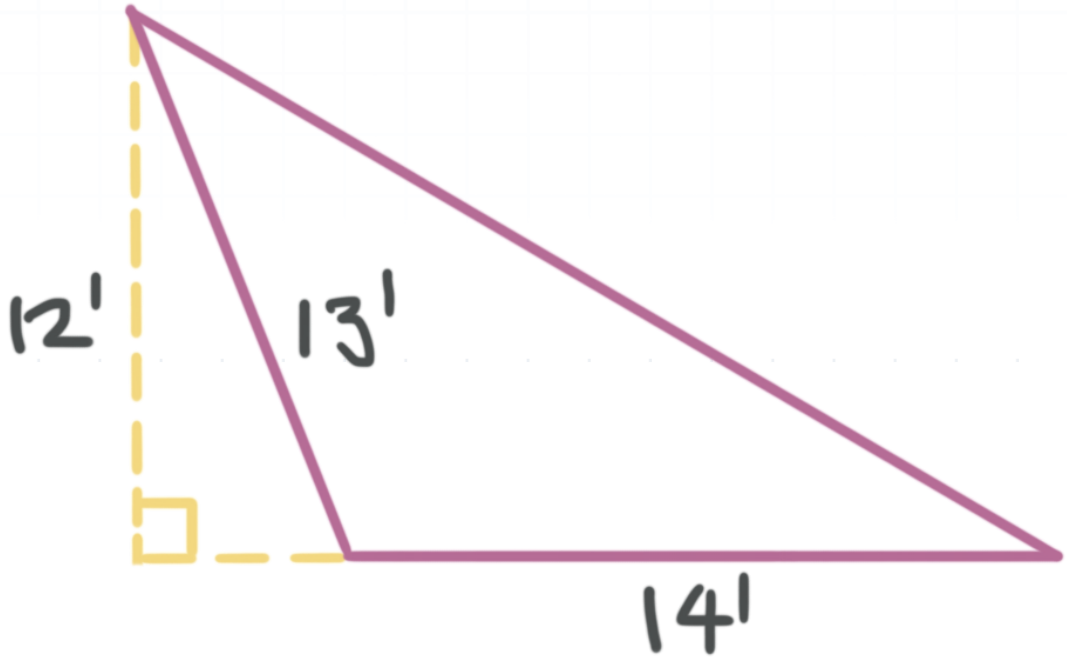


Let's start by working through an example.

Example

Find the area of the triangle.



The area formula for a triangle is

$$A = \frac{1}{2}bh$$

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In the diagram, the base of the triangle is 14 feet and the height is 12 feet. Plugging these into the area formula, we get

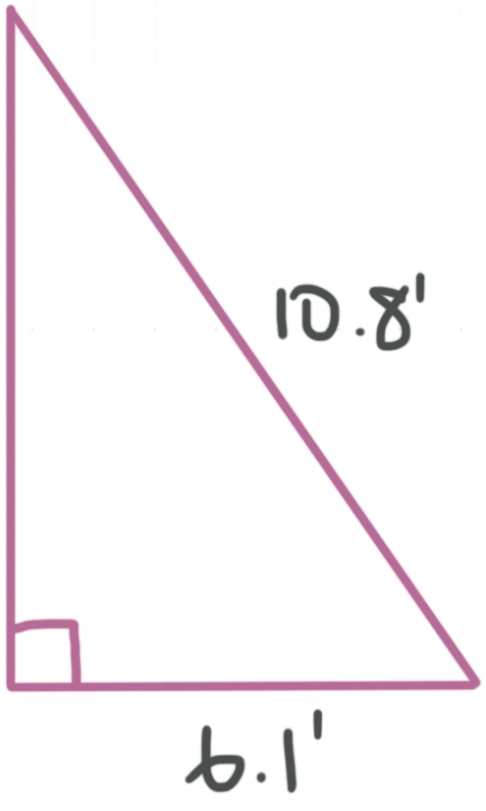
$$A = \frac{1}{2}(14)(12)$$

$$A = 84 \text{ feet}^2$$

Let's do one more.

Example

Find the area of the right triangle to the nearest tenth.



The area of a triangle is given by

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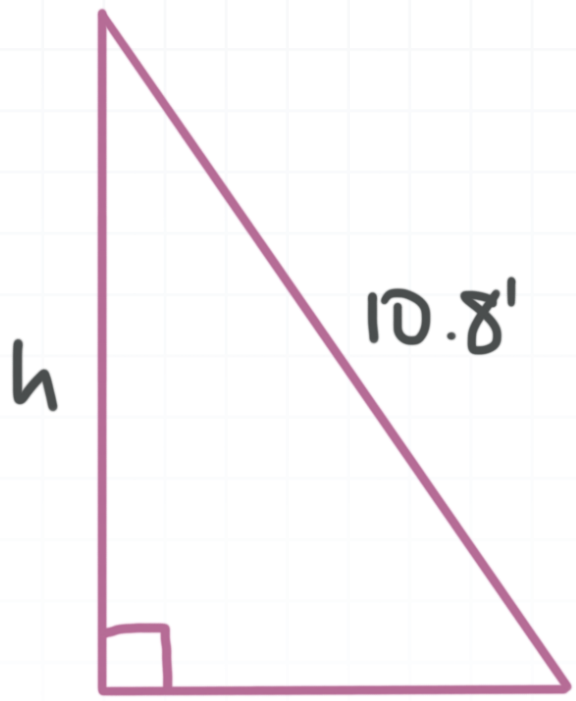
$$A = \frac{1}{2}bh$$

We can see that the base of the triangle is $6.1'$, but we'll need to use the Pythagorean Theorem to find the height. We'll sketch in the height,



and then plug everything into the Pythagorean Theorem.

$$6.1^2 + h^2 = 10.8^2$$

$$37.21 + h^2 = 116.64$$

$$h^2 = 79.43$$

$$h = \pm\sqrt{79.43}$$

$$h \approx \pm 8.9$$

Since we're looking for height, we only need the positive answer, $h \approx 8.9$. Now we can plug into the area formula.

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$$A \approx \frac{1}{2}(6.1)(8.9)$$

$$A \approx 27.1 \text{ feet}^2$$

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